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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,285	07/08/2003	Ajit Shankaranarayanan	GEMS8081.175	1284

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EXAMINER

LAMPRECHT, JOEL

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/604,285	Applicant(s) SHANKARANARAYANAN ET AL.	
	Examiner Joel M. Lamprecht	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5 and 7-9 is/are allowed.
- 6) ☒ Claim(s) 10,12-17 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 11 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. In regards to Claim 10, Applicant's arguments have been fully considered by they are not persuasive. Kimura discloses within the specification both a preparation RF pulse (see Col 1, Lines 44-66) as well as modification/accounting for one-way blood flow translation through an imaging volume (see a number of different "modifications", including Col 1 Line 62-65, Col 16 Lines 22-50, Col 21 Lines 46-63).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. In regards to Claim 17, Applicant argues that Kimura does not teach the capability of a computer readable medium/computer program stored on, to "determine a distance spins of a magnetization prepared tissue of a patient will travel while the patient is translated through an imaging volume by a moving table during a prescribed preparation interval defined as the time between application of a saturation pulse and commencement of an imaging pulse sequence. The Examiner respectfully disagrees. Kimura most definitely discloses a means/method for accounting for translational displacement of a subject (therein being one-directional blood flow) and the applicant

has admitted that this is the case, thereby a much simpler determination based on the known speed of the translated table could easily be within the accepted scope of the disclosure by Kimura. The analogy that is pertinent would be if the Examiner were to roll a ball down the floor of a moving airplane. The total velocity with respect to the ground is in direct correlation with the speed of the airplane. That is, the speed at which the ball (blood) is rolling (flowing) within the airplane bears precedence to the speed at which the airplane is flying (MRI table is moving, a controlled variable). Once the Examiner solves for the speed of the ball within the confines of the airplane, then the Examiner need only subject the determined velocity to the additional velocity of the airplane, a user-controlled measurement, rather than the significant, solved variable (blood flow).

4. Claims 10, 12-15, 17, 19, 21, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Kimura (US 6564080). Kimura discloses a system for magnetic resonance including gradient coils to spatially encode spins and an RF to acquire MR images. Further, Kimura discloses a system which includes a computer which allows a user to input a preparation interval, Gaptag, which is the spacing between a tagging inversion recovery pulse and an image acquisition pulse (figure 4, step 31). In this instance, the subject being continuously translated through the imaging volume is one-way blood flow, as shown in figure 1. The frequency offset is calculated (figure 4, step 32) from the input parameters including the preparation interval. The preparation interval is applied in the direction opposite of subject translation. The process is repeated, including application of the preparation pulse for separate slices, as is

inherent in obtaining slices of image data for reconstruction (figure 4, step 36). Any type of fast-imaging pulse sequence may be used as long as T1 time can be enhanced, which includes a gradient-echo sequence (col 14, lines 35-40). Either an inversion recovery pulse or a saturation pulse may be used (col 21, lines 46-52). The distance spins of the prepared tissue will travel while translated through the imaging volume is determined depending on translation speed, the inversion time, along with other parameters (col 4, lines 23-27). The technique disclosed images in single slices, however an improved technique is disclosed which enables multi-slice imaging (col 2, lines 29-31).

5. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura in view of Machida. Kimura, as discussed above, substantially discloses the invention as claimed, however fails to explicitly disclose changing the preparation sequence and that slice thickness of the preparation and imaging volumes. Machida also discloses a system using a preparation pulse and an imaging pulse to acquire images of a continuously moving volume and further discloses that the offset frequency changes, as it is dependent on the moving speed of the tabletop (paragraph 7), which is not a constant value. Additionally, the excited slice has the same width as the fixed imaging slice (figures 4a-4d) and the subject is translated continuously through the imaging volume so that each slice is selectively excited and then imaged as it is translated. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Kimura in light of the teachings in the reference by

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Machida, as Machida states making this adjustment enables the position of a selectively excited slice to be tacked during continuous movement of an object.

Allowable Subject Matter

6. Claims 1-9 are allowable. The prior art of record does not teach the determination of an offset value form a product of translation distance of a spin at a user-defined TI, amplitude of a slice selective gradient applied to the imaging volume, and a gyromagnetic ratio.

7. Claims 11, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joel M. Lamprecht whose telephone number is (571) 272-3250. The examiner can normally be reached on Monday-Friday 7:30AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JML
11/7/06


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